Mem. Natl Inst. Polar Res., Spec. Issue, **40**, 187–190, 1986

CHANGES IN THE CONDITION OF THE SURFACE WATER AND DISTRIBUTION OF *EUPHAUSIA SUPERBA* DANA BETWEEN 65°E AND 75°E IN THE ANTARCTIC OCEAN DURING THE PACK ICE MELTING SEASON (EXTENDED ABSTRACT)

Mikio NAGANOBU[1] and Yuzo KOMAKI[2]

[1]*Ocean Research Institute, University of Tokyo, 15-1, Minamidai 1-chome, Nakano-ku, Tokyo 164*
[2]*Far Seas Fisheries Research Laboratory, 7-1, Orido 5-chome, Shimizu 424*

From the survey by the KAIYO MARU in 1970–80 and 1980–81 (SUISANCHÔ, 1980, 1983), the catch conditions of fishing boats and changes in the distribution of *Euphausia superba* during the pack ice melting season have been reported, but the process of changes is not clean. To investigate the process of changes in distribution of *E. superba* during the melting season, the area between 65° and 75°E twice was surveyed in December 1983 and again in January to February 1984 during the KAIYO MARU's SIBEX voyage. By comparing the results obtained in the two periods, this paper deals with the conditions of the surface layer water and the distribution of *E. superba*.

Surface water temperatures were negative during December, and rose over 0.5°C during January–February when the pack ice receded southwards (Figs. 1a, 1b). The eastward flow is dominant in the area north of 65°S, and to the south the flow has a gentle meander (Figs. 2a, 2b).

The catch of *E. superba* by KYMT net showed large quantities near the pack ice edge in December (Fig. 3a), and some abundance near 63°S and south of 76°S in January–February (Fig. 3b). Apart from *E. superba*, other varieties of Euphausiacea such as *Thysanoessa macrura*, *E. triacantha*, and *E. crystallorophias* appeared. Record of the echo sounder gave no evident difference in density (SUISANCHÔ, 1985). The sex ratio, body length and fatness showed considerable fluctuations at a swarm level.

There was no marked change in distribution and ecology of *E. superba* between these two surveys. Continued surveys, by an icebreaker if possible, at the time of pack ice melting would be very useful.

References

SUISANCHÔ (Jpn. Fish. Agency), ed. (1980): KAIYO MARU Chôsa Kôkai Hôkokusho, Dai-1-ji Nankyokukai Chôsa, Shôwa 54-nendo. Tokyo, 362 p.

SUISANCHÔ (Jpn. Fish. Agency), ed. (1983): Kaiyo Maru Chôsa Kôkai Hôkokusho, Dai-2-ji Nankyokukai Chôsa, Shôwa 55-nendo. Tokyo, 321 p.

SUISANCHÔ (Jpn. Fish. Agency), ed. (1985): Kaiyo Maru Chôsa Kôkai Hôkokusho, Dai-3-ji Nankyokukai Chôsa, Shôwa 58-nendo. Tokyo, 354 p.

(Received April 24, 1985; Revised manuscript received July 11, 1985)

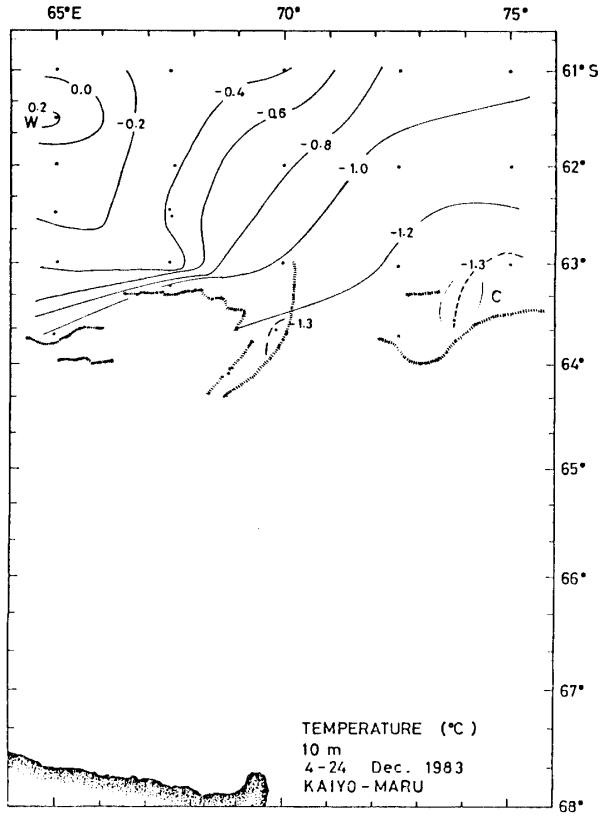

Fig. 1a. Horizontal distribution of water temperature at 10 m in December 1983.

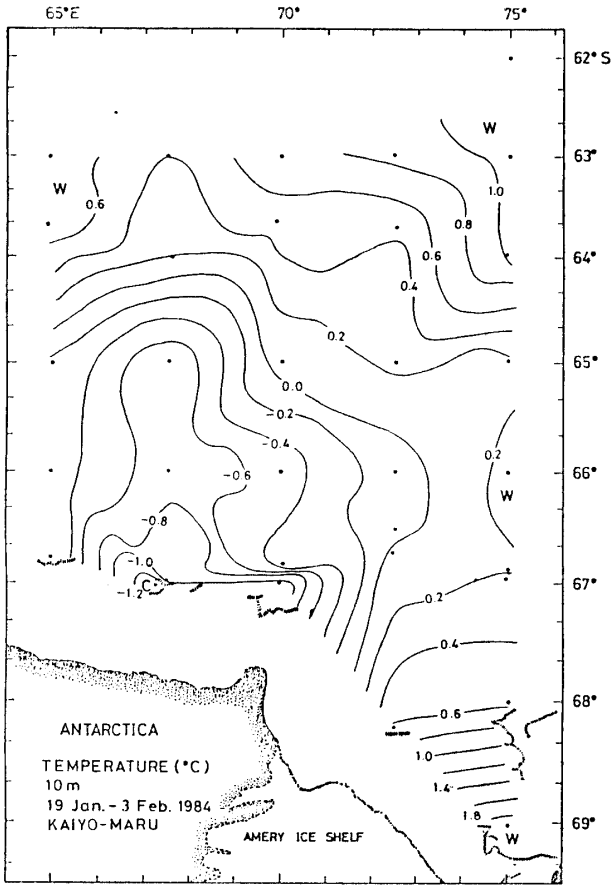

Fig. 1b. Horizontal distribution of water temperature at 10 m in January–February 1984.

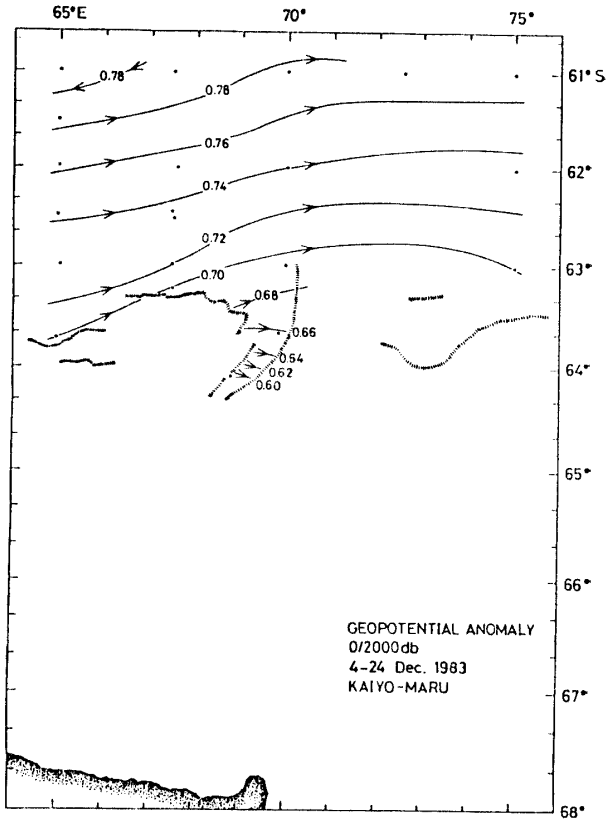

Fig. 2a. Geopotential anomaly at the sea surface relative to the 2000-decibar surface in December 1983.

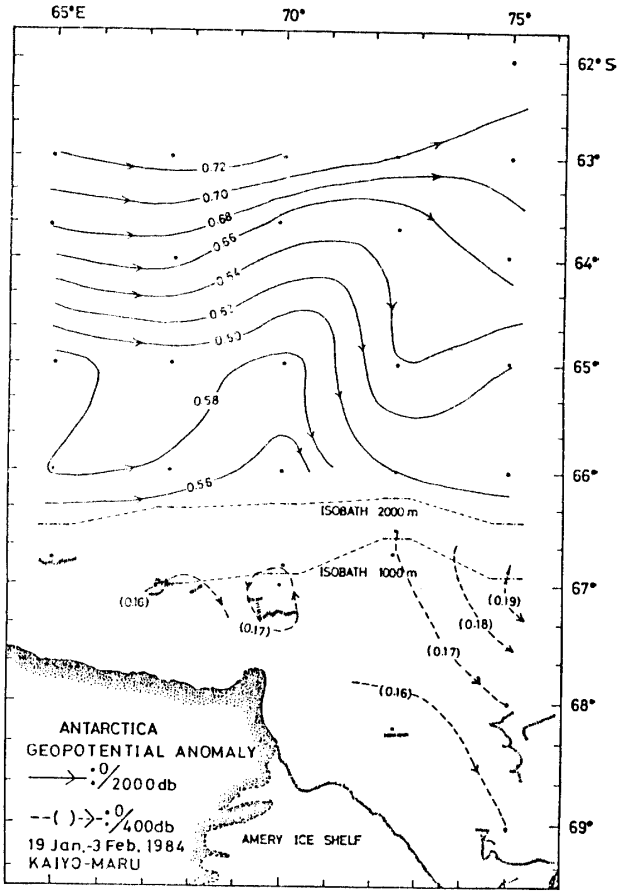

Fig. 2b. Geopotential anomaly at the sea surface relative to the 2000-decibar surface and 400-deceibar surface in January–February 1984.

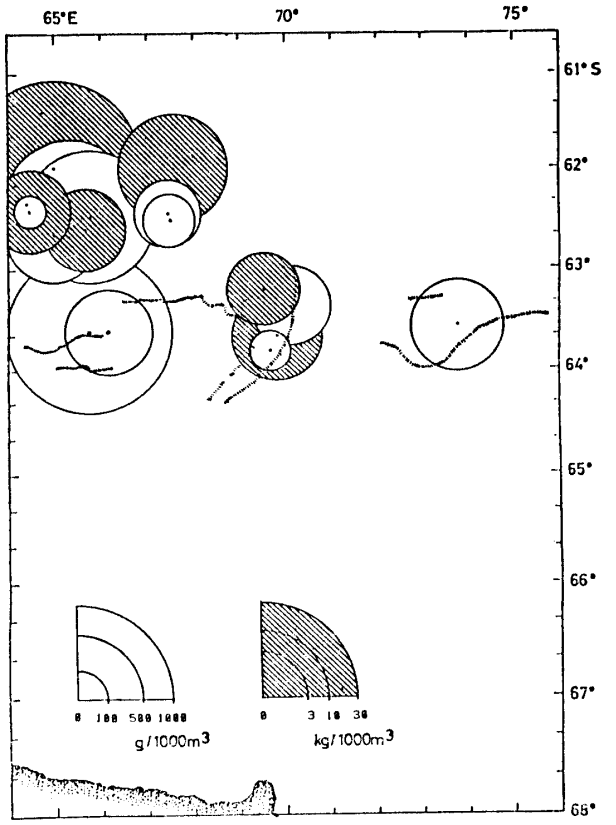

Fig. 3a. Horizontal distribution of E. superba *catch in December 1983.*

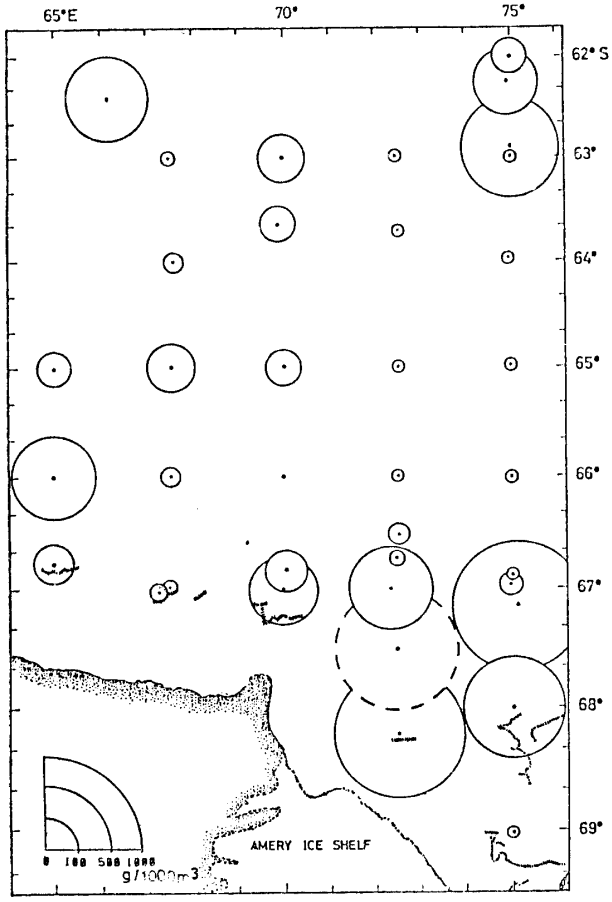

Fig. 3b. Horizontal distribution of E. superba *catch in January–February 1984.*